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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/689,774	10/13/2000	Akio Katsube	018976-181	8104
21839 7590 11/19/2007 BUCHANAN, INGERSOLL & ROONEY PC POST OFFICE BOX 1404 ALEXANDRIA, VA 22313-1404			EXAMINER COZART, JERMIE E	
			ART UNIT 3726	PAPER NUMBER
			NOTIFICATION DATE 11/19/2007	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

09/689,774

Applicant(s)

KATSUBE ET AL.

Examiner

Jermie Cozart

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 7, 9-14 and 19 is/are pending in the application.
- 4a) Of the above claim(s) 1-4 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7, 9-14 and 19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/31/07 has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 7, 11, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Best et al. (3,561,107).

Regarding **claim 7**, Best discloses manufacturing electronic parts by providing a holding jig (10) made of an elastic material (i.e. plastic; col. 2, lines 18-19), wherein at least one surface of the elastic material is adhesive (i.e. plastic is inherently adhesive depending on temperature or the chemical composition of the material being attached to the plastic), mounting a substrate (12, 14, 16) on the holding jig (10) by an adhesive strength of the surface of the elastic material, mounting an element (30) onto the substrate (12, 14, 16) and electrically connecting (col. 2, lines 27-35) the element (30) to

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the substrate (12, 14, 16) while the substrate is held on the surface of the elastic material, and inherently applying ultrasonic waves (via vibratory member 40; col. 2, lines 47-58) to a bonding portion at which the electric connection (col. 2, lines 27-35) is performed while the substrate (12, 14, 16) is held on the surface of the elastic material (10).

Regarding **claim 11**, the step of holding the substrate (12, 14, 16) includes using the holding jig which includes a laminate structure of a hard plate (i.e. anvil 38; col. 2, line 48) and the elastic material (10).

Regarding **claim 14**, the mounting process includes a bump bonding process (i.e. solid conductive members 32, 34, 36 serve as bumps which facilitate the bonding of the chip/element 30 to the substrate 12, 14, 16).

See column 2, lines 18-58, and figures 1-3 for further clarification.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 7, 11, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Best et al. (3,561,107) in view of Weissenstern et al (3,255,511).

Regarding **claim 7**, Best discloses manufacturing electronic parts by providing a holding jig (10) made of an elastic material (i.e. plastic; col. 2, lines 18-19), wherein at least one surface of the elastic material is adhesive (i.e. plastic is inherently adhesive

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depending on temperature or the chemical composition of the material being attached to the plastic), mounting a substrate (12, 14, 16) on the holding jig (10) by an adhesive strength of the surface of the elastic material, mounting an element (30) onto the substrate (12, 14, 16) and electrically connecting (col. 2, lines 27-35) the element (30) to the substrate (12, 14, 16) while the substrate is held on the surface of the elastic material, and applying vibratory energy [via vibratory member 40; col. 2, lines 47-58] to a bonding portion at which the electric connection (col. 2, lines 27-35) is performed while the substrate (12, 14, 16) is held on the surface of the elastic material (10).

Regarding **claim 11**, the step of holding the substrate (12, 14, 16) includes using the holding jig which includes a laminate structure of a hard plate (i.e. anvil 38; col. 2, line 48) and the elastic material (10).

Regarding **claim 14**, the mounting process includes a bump bonding process (i.e. solid conductive members 32, 34, 36 serve as bumps which facilitate the bonding of the chip/element 30 to the substrate 12, 14, 16).

See column 2, lines 18-58, and figures 1-3 for further clarification.

Best, however, does not explicitly disclose applying ultrasonic waves to the bonding portion.

Weissenstern discloses applying an ultrasonic transducer (21) to mount an element (16) to a substrate (11), wherein it is inherent that the ultrasonic transducer applies ultrasonic waves because the transducer converts electrical energy to very high frequency vibratory mechanical energy in the frequency range between 40 and 100 kc. per second such that a true metallurgical bond is formed between the thin metal films of

the element and substrate. *See column 2, line 10 – column 3, line 46, and figure 4 for further clarification.*

Therefore, it would have been obvious to one having ordinary in the art at the time the invention was made to substitute the vibratory member of Best with an ultrasonic transducer that applies ultrasonic waves to a bonding portion, in light of the teachings of Weissenstern, in order to create a true metallurgical between the contact portions of the element and substrate.

6. Claims 9, 10, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Best/Weissenstern as applied to claim 7 above, and further in view of Oehmke (4,098,945).

Best/Weissenstern discloses all of the claimed subject matter except for the hardness of the elastic material having a rubber hardness degree of at least A30, the holding jig comprising heat-resistant material having a heat-resistance temperature of about 250°C, and the elastic material comprising silicone resin.

Oehmke discloses a conductive adhesive elastic material comprising an elastic binder for "peelable adhesive fastening of metallic materials without interruption of the electrical conductive pathways between them" (col. 7, lines 62-64). It is disclosed that the conductive material may preferably comprise silicone rubber (col. 6, lines 38-43). Furthermore, it is noted that the "binder should be capable of providing a soft composition having a Shore A hardness of less than about 40" (col. 6, lines 34-36). It is also pointed out that a Shore A hardness of greater than 40 is too hard for most applications (col. 1, line 66 – col. 2, line 1).

Regarding claim 9, it would have been obvious to one having ordinary skill in the art at the time of invention, to have provided the elastic of Best/Weissenstern with a rubber having a hardness of at least A30, in light of the teachings of Oehmke, in order to provide an adhesive having a requisite conformability, moldability, and flexibility (col. 2, lines 21 + of Oehmke).

Regarding claim 10, Applicant and Oehmke each disclose a Silicone rubber composition. Applicant notes that these composition are stable at 250 °C. "Products of identical chemical composition can not have mutually exclusive properties. A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present." In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

Regarding claim 12, in Oehmke the elastic material is an adhesive silicone rubber layer (col. 6, lines 38-43).

7. Claims 9, 10, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Best et al. in view Oehmke (4,098,945).

Best discloses all of the claimed subject matter except for the hardness of the elastic material having a rubber hardness degree of at least A30, the holding jig comprising heat-resistant material having a heat-resistance temperature of about 250°C, and the elastic material comprising silicone resin.

Oehmke discloses a conductive adhesive elastic material comprising an elastic binder for "peelable adhesive fastening of metallic materials without interruption of the

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electrical conductive pathways between them" (col. 7, lines 62-64). It is disclosed that the conductive material may preferably comprise silicone rubber (col. 6, lines 38-43). Furthermore, it is noted that the "binder should be capable of providing a soft composition having a Shore A hardness of less than about 40" (col. 6, lines 34-36). It is also pointed out that a Shore A hardness of greater than 40 is too hard for most applications (col. 1, line 66 – col. 2, line 1).

Regarding **claim 9**, it would have been obvious to one having ordinary skill in the art at the time of invention, to have provided the elastic of Best with a rubber having a hardness of at least A30, in light of the teachings of Oehmke, in order to provide an adhesive having a requisite conformability, moldability, and flexibility (col. 2, lines 21 + of Oehmke).

Regarding **claim 10**, Applicant and Oehmke each disclose a Silicone rubber composition. Applicant notes that these composition are stable at 250 °C. "Products of identical chemical composition can not have mutually exclusive properties. A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present." In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

Regarding **claim 12**, in Oehmke the elastic material is an adhesive silicone rubber layer (col. 6, lines 38-43).

8. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Best et al. or Best/Weissenstern.

Both Best and Best/Weissenstern each disclose a mounting process.

Both Best and Best/Weissenstern, however, do not disclose the mounting process including a wire bonding process.

At the time the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to mount the element of either Best or Best/Weissenstern to the substrate using a wire bonding process because Applicant has not disclosed that the mounting process including a wire bonding process provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with bump mounting process of either Best or Best/Weissenstern because the element is securably and electrically connected to the substrate.

Therefore, it would have been an obvious matter of design choice to modify Best to obtain the invention as specified in claim 13.

9. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over either Best or Best/Weissenstern.

Both Best and Best/Weissenstern disclose all of the claimed subject matter except for the adhesive strength of the surface of the elastic material being 1 to 10 g/mm².

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the adhesive strength of the surface of the elastic material from between 1 to 10 g/mm², since it has been held that where the general

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conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Response to Arguments

10. Applicant's arguments filed 10/31/07 have been fully considered but they are not persuasive.

Applicants argue that Best does not disclose mounting a substrate on a holding jig by an adhesive strength of an elastic material as in independent claim 7.

In response, the Examiner maintains that since the jig is made of an elastic material (i.e. plastic) and Best discloses that the substrate (12, 14, 16) is formed by any of several methods well known by one of ordinary skill in the art, therefore one of ordinary skill in the art can surmise in any instance of forming the substrate onto the jig that there will inherently be some adhesive strength to retain the substrate on the jig. The adhesive strength of the elastic material is well known in that one of the well known methods of attaching the elastic material to the substrate involves either the use of an adhesive, lamination, or coating, all of which exhibit some sort of adhesive strength for retaining the elastic material in contact with the substrate.

Applicants also argue that one of ordinary skill in the art would not have been motivated to combine the soft conformable conductive composition of Oehmke with Best because the substrate of Best 10 is dielectric.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention

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where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, although the composition of Oehmke is conductive, Oehmke does disclose all of the aforementioned limitations of claims 9, 10, and 12 which Applicants do not dispute. Best is deficient in that it does not teach the composition as mentioned in claims 9, 10, and 12. Therefore, the combination of Best in view of Oehmke renders the claimed invention obvious.

In response to applicants' arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).


Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jermie Cozart whose telephone number is 571-272-4528. The examiner can normally be reached on Monday-Thursday, 7:30 am - 6:00 pm.

12. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bryant can be reached on 571-272-4526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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13. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



JERMIE E. COZART
PRIMARY EXAMINER

November 8, 2007